

Cullen-Snyder Framework Analysis of Connecticut Naturopathic Thermography Practices

Date: March 20, 2026

Analyst: Analysis commissioned by Rob Cullen

Framework Version: CSF v1.1

Subject: CT Naturopathic thermography marketing and practice claims

Executive Summary

This report applies the Cullen-Snyder Framework for Evaluative Analysis of Naturopathy with Regard to Freedom (CSF v1.1) to thermography practices marketed by Connecticut naturopathic practitioners. The analysis reveals systematic patterns of epistemic conflation, misrepresentation of FDA regulatory status, and claims contradicting current scientific evidence. These practices demonstrate high Science Camouflage Index scores and significant negative impacts across all five Snyderian freedom dimensions, particularly Sovereignty, Factuality, and Solidarity.

Key Findings:

- FDA approval status systematically misrepresented across multiple practices
 - Claims of "8 years earlier detection" and "90% sensitivity/specificity" contradict peer-reviewed evidence
 - Thermography positioned as standalone screening despite FDA classification as adjunctive-only
 - Patterns suggest coordinated messaging from CT Thermography vendor across multiple ND practices
-

I. Foundational Analysis

A. Epistemic Profile Assessment (Cullen-Based)

1. Science Camouflage Index

Practice/Source	SCI Score	Key Camouflage Mechanisms
Connecticut Natural Medicine (pp.2-3)	8.5/10	Claims "Medical DITI" has "high sensitivity to pathology"; uses technical terminology ("infrared radiation," "thermal symmetry") to suggest scientific validation
CT Thermography/Beaman (pp.10-16)	9.0/10	"FDA approved" claim without clarifying "adjunctive only" status; "detect changes... years before tumors begin to form" implies diagnostic capability
SNHC/Fasullo (pp.17-19)	7.5/10	"Progressive technology"; "detect areas of potential disease years earlier than other exams" without evidence citation
Shalva Clinic (pp.20-24)	9.5/10	"Studies have shown... up to 8 years before a mammogram"; "sensitivity and specificity of 90%"; "over 800 studies in the index-medicus" - uncited, contradicts systematic reviews
SOPHIA/Mahfoud (pp.25-29)	9.0/10	"FDA approved" without qualifier; "medical evidence consistently supports that MTI has advanced far beyond... investigational or experimental"; contradicts FDA warnings[1][2]
Roots Medical Center (pp.30-35)	6.5/10	More cautious language; emphasizes "aid in detection" and "baseline comparison" rather than standalone diagnostic claims
Violet Hill/Wing (pp.36-40)	5.0/10	Minimal claims; partners with CT Thermography but provides no independent marketing

42)		no independent marketing claims
-----	--	---------------------------------

Table 1: Science Camouflage Index scores by practice (0=no camouflage, 10=complete science-exterior practice presented as science-based)

Pattern Analysis: Six of seven practices score above 7.0, indicating systematic epistemic conflation. The use of technical medical terminology ("Medical DITI," "neoangiogenesis," "thermoregulation") creates false equivalence with evidence-based diagnostic imaging.

2. Institutional Legitimacy Score

Legitimacy Marker	Claimed	Actual Status
FDA Approval Status	"FDA approved" (5 practices)	FDA: Cleared as adjunctive only, NOT standalone screening; FDA issued warnings 2011, 2019, 2023, 2024[1][2][3]
Sensitivity/Specificity	"Average... 90%" (Shalva)	Systematic review: median sensitivity 47-59%, specificity 44-58%[4][5]
Early Detection Claims	"8 years before mammogram" (Shalva, SOPHIA)	No peer-reviewed evidence supports this timeline; thermography detects existing tumors less effectively than mammography[6][7]
Study Volume	"Over 800 studies," "300,000 women" (Shalva)	Studies exist but systematic reviews show insufficient evidence for standalone screening[4][8]
Insurance Coverage	"Not covered by insurance" acknowledged (multiple)	Reflects lack of evidence-based status; insurers classify as investigational/experimental

Table 2: Institutional legitimacy claims versus evidentiary support

Assessment: Institutional legitimacy is manufactured through selective citation, misrepresentation of regulatory status, and omission of contradictory evidence. The gap between claimed and actual evidentiary support is substantial.

II. Freedom Impact Matrix (Snyder-Based)

B. Sovereignty Assessment

Evaluation Criterion: *Degree to which naturopathic practices preserve or impair patient self-governance through accurate, complete, and non-misleading disclosure of evidence, risks, and alternatives.*

Sovereignty Element	Impact	Evidence from CT ND Practices
Informed Consent Integrity	Severely Impaired	No practices disclose FDA warnings against standalone use[1][2]; Shalva claims "22x higher risk" indicator without contextualizing high false-positive rates
Alternative Disclosure	Impaired	Thermography presented as superior alternative ("radiation-free," "non-invasive") without disclosing mammography's superior sensitivity/specificity for early detection[6][7]
Risk Communication	Severely Impaired	False-negative risk not disclosed; opportunity cost of delayed/avoided mammography not addressed; CT Thermography markets as "perfect for naturopathic screening"
Evidence Quality Disclosure	Absent	Zero practices acknowledge systematic review findings showing insufficient evidence; "investigational/experimental" insurance classification not explained
Overall Sovereignty Score	2.5/10	Patients cannot provide informed consent when fundamental evidence gaps and regulatory warnings are concealed

Table 3: Sovereignty impact assessment

Critical Findings:

- **CT Thermography article** (pp.10-16) titled "Why Thermography Is Perfect for Naturopathic Screening" frames technology as validated screening tool without disclosing FDA adjunctive-only status
- **Shalva Clinic** provides detailed statistical claims ("96.2% sensitivity when combined," "22x risk indicator") creating false

- precision while omitting systematic review contradictions[4][5]
- **SOPHIA** explicitly contradicts insurance classifications: "Even though it is classified by many insurance companies as investigational or experimental, the practical reality is that the medical evidence consistently supports that MTI has advanced far beyond either of these imposed labels"

Sovereignty Conclusion: Patients are presented with epistemically compromised information that systematically overstates benefits and conceals limitations, preventing authentic informed consent.

C. Unpredictability Assessment

Evaluation Criterion: *Extent to which naturopathic diagnostics and treatments operate within reproducible, evidence-bounded uncertainty versus non-standardized, doctrine-driven variability.*

Unpredictability Factor	Assessment	Evidence
Standardization of Interpretation	Low-Moderate	Multiple practices reference "specially-trained MDs" and "standardized interpretation protocols established for 15 years" (Shalva), suggesting some standardization efforts
Reproducibility of Results	Unclear	Thermal imaging itself is reproducible, but clinical interpretation shows high variability; systematic reviews document wide performance ranges (sensitivity 25-97%)[4]
Outcome Predictability	Poor	High false-positive rates (31-58%)[4][5] create unpredictable patient pathways; unclear clinical action protocols for abnormal findings
Evidence-Bounded Uncertainty	Absent	Practices present thermography with false certainty rather than acknowledging evidence limitations; no discussion of confidence intervals or test performance variability
Overall Unpredictability Score	4.0/10	Technology has some standardization, but clinical application introduces high variability masked by certainty claims

Table 4: Unpredictability impact assessment

Critical Findings:

- **Shalva hypothetical growth chart** (pp.20-24) presents oversimplified tumor progression timeline without acknowledging biological variability

- **False-positive implications:** With median specificity of 44-58% [4][5], majority of "abnormal" thermograms in screening population represent false alarms, creating unpredictable anxiety and additional testing cascades
- **Baseline comparison model:** Multiple practices emphasize establishing "thermal baseline" and annual monitoring, but lack evidence that thermal pattern changes reliably predict cancer development

Unpredictability Conclusion: Moderate-to-high unpredictability is concealed beneath veneer of technical precision and false diagnostic confidence.

D. Mobility Assessment

Evaluation Criterion: *Degree to which naturopathic engagement preserves or constrains patient ability to access, transition to, or integrate evidence-based medical care without informational, financial, or belief-based barriers.*

Mobility Factor	Impact	Evidence from CT ND Practices
Access to Evidence-Based Care	Moderately Impaired	Multiple practices position thermography as alternative to mammography; CT Thermography article emphasizes "radiation-free" and "non-invasive" framing mammography negatively
Transition Barriers (Informational)	Impaired	Patients receiving "abnormal" thermogram may delay mammography based on belief thermography provides equivalent/superior information
Transition Barriers (Financial)	Present	Out-of-pocket costs (\$150-300 typical) for thermography may compete with resources for evidence-based screening; HSA eligibility mentioned (Chimileski) suggests positioning as legitimate medical expense
Transition Barriers (Belief-Based)	Significantly Impaired	Framing thermography as "detecting cancer 8 years earlier" creates belief that mammography is inadequate; "radiation-free" emphasis may generate fear of mammography
Integration Potential	Mixed	Some practices (Shalva, SOPHIA) acknowledge "multi-modal approach" and position as adjunctive; others (CT Thermography) position as standalone "naturopathic screening"
Overall Mobility Score	4.5/10	Informational and belief-based barriers created, though some practices maintain adjunctive positioning

Table 5: Mobility impact assessment

Critical Findings:

- **Mammography displacement risk:** CT Thermography article (pp.10-16) emphasizes "screening for issues without invading your personal space" and avoiding procedures that are "invasive," creating psychological barrier to mammography
- **Financial diversion:** At \$150-300+ per screening, thermography represents financial commitment that may delay or prevent evidence-based mammography, particularly for cost-sensitive patients
- **Return pathway unclear:** Practices that identify "abnormal" findings do not specify clear integration protocols with conventional radiology; several NDs offer "natural treatment solutions for conditions uncovered using Thermography" (Shalva), suggesting parallel treatment pathway rather than integration

Mobility Conclusion: Patient mobility between naturopathic and evidence-based systems is constrained by informational framing that positions thermography as superior/safer alternative and creates belief-based resistance to mammography.

E. Factuality Assessment

Evaluation Criterion: *Accuracy, proportionality, and evidentiary integrity of claims regarding naturopathic diagnostics, mechanisms, and treatments, including whether science-exterior practices are represented as scientifically validated.*

Claim Category	Factuality Score	Analysis
FDA Approval Status	1/10 (False)	Five practices claim "FDA approved" without clarifying adjunctive-only status; FDA has issued multiple warnings (2011, 2019, 2023, 2024) against standalone use[1][2][3]
Early Detection Timeline	0/10 (False)	"8 years before mammogram" claim (Shalva, SOPHIA) lacks peer-reviewed support; thermography detects existing masses less effectively than mammography, not earlier[6][7]
Sensitivity/Specificity	1/10 (Grossly Inflated)	"90% sensitivity and specificity" (Shalva) contradicts systematic reviews showing 47-59% sensitivity, 44-58% specificity[4][5]; even optimistic meta-analysis shows high false-positive rates[8]
Study Volume Claims	3/10 (Misleading)	"Over 800 studies," "300,000 women" (Shalva) technically accurate but misleadingly implies supportive evidence; systematic reviews of these studies conclude insufficient evidence for standalone screening[4]
Mechanism Claims	6/10 (Partially)	Neoangiogenesis principle is scientifically valid; thermal imaging technology is accurate; however, clinical

	Accurate)	application to breast cancer screening lacks validation
Risk-Benefit Ratio	2/10 (Distorted)	Emphasizes benefits (radiation-free, non-invasive) while concealing harms (high false-positive rate, false reassurance, opportunity cost of delayed mammography)
Overall Factuality Score	2.2/10	Systematic pattern of false, inflated, and misleadingly selective claims across fundamental evidentiary dimensions

Table 6: Factuality assessment by claim category (0=completely false, 10=completely accurate and proportional)

Detailed Claim Analysis:

1. FDA Status Misrepresentation

- **Shalva Clinic claim:** "In 1982, the FDA approved breast thermography as an adjunct diagnostic breast cancer screening procedure... FDA approved, Thermography can forewarn women of breast health problems up to 8 years before symptoms may be visible."
- **Factual status:** FDA has never approved thermography for early detection 8 years before mammography. FDA cleared specific devices as adjunctive tools only, and has issued repeated warnings (most recently 2024) that thermography "has not been shown to be effective as a standalone test for breast cancer screening"[1][2]
- **Factuality impact:** This represents direct contradiction of FDA guidance, not mere omission

2. Sensitivity/Specificity Inflation

- **Shalva Clinic claim:** "Breast thermography has an average sensitivity and specificity of 90%"

- **Systematic review evidence:**
 - Screening context: median sensitivity 47%, median false-positive rate 31%[4]
 - Diagnostic context: median sensitivity 59%[4]
 - Comparative study: thermography 81.6% sensitivity, 57.8% specificity vs. mammography 80.5% sensitivity, 73.3% specificity (thermography accuracy 69.7% vs. mammography 76.9%)[5]
 - Recent meta-analysis: high sensitivity but "moderate specificity," indicating high false-positive rates[8]
- **Factuality impact:** The "90%" claim appears to represent best-case scenarios from selected studies rather than aggregate evidence, constituting material misrepresentation

3. Early Detection Timeline

- **Multiple practice claims:** "Detect changes... years before tumors begin to form" (CT Thermography); "up to 8 years before a mammogram" (Shalva, SOPHIA); "detect early lesions before they are clinically evident" (Connecticut Natural Medicine)
- **Evidence status:**
 - No peer-reviewed evidence supports 8-year earlier detection claim
 - MD Anderson: "Some research has shown that thermography may be able to detect big, advanced cancers... detecting large, later-stage cancers is not as beneficial"[7]
 - Thermography detects heat from existing vascular activity, not pre-tumor physiological changes with validated cancer progression timeline
- **Factuality impact:** The temporal claim is unsupported and contradicts evidence showing thermography is less effective at detecting early-stage cancers than mammography

Factuality Conclusion: The practices demonstrate systematic factual distortion across regulatory status, test performance characteristics, and clinical evidence. This is not mere optimism or selective emphasis but material misrepresentation of fundamental scientific and regulatory facts.

F. Solidarity Assessment

Evaluation Criterion: *Extent to which naturopathic practices align with or diverge from shared, evidence-based healthcare standards, including impacts on institutional trust, public health coordination, and collective patient welfare.*

Solidarity Dimension	Impact	Evidence from CT ND Practices
Alignment with Evidence-Based Standards	Severely Divergent	Practices contradict FDA guidance, professional radiology society recommendations, and systematic review conclusions
Institutional Trust Impact	Negative	Misrepresentation of FDA approval undermines regulatory authority; dismissal of insurance classifications as merely "imposed labels" (SOPHIA) delegitimizes evidence standards
Public Health Coordination	Impaired	No evidence of coordination with CT mammography screening programs; parallel system may fragment breast cancer screening infrastructure
Collective Patient Welfare	Negative	Population-level effects: delayed diagnosis from false reassurance, increased anxiety from false positives, resource diversion from evidence-based screening
Professional Accountability	Absent	No disclosure of conflicts of interest; CT Thermography appears to provide standardized marketing materials to multiple ND practices; vendor-driven messaging
Overall Solidarity Score	2.0/10	Practices operate in parallel to and undermine evidence-based breast cancer screening infrastructure

Table 7: Solidarity impact assessment

Critical Findings:

1. Vendor Coordination Pattern

Multiple practices (Connecticut Natural Medicine, Chimileski/Hawthorn, Violet Hill) explicitly partner with "CT Thermography" company and direct scheduling through their system. Key concerns:

- Standardized messaging appears across multiple ND websites (similar language about "FDA approved," "radiation-free," "early detection")
- CT Thermography provides article "Why Thermography Is Perfect for Naturopathic Screening" (pp.10-16) that NDs link to, creating coordinated marketing
- Business model: CT Thermography operates satellite offices in ND clinics (Columbia, Ellington, Glastonbury, Hamden, Sharon, Westport, plus MA and NH locations)
- No disclosure of financial arrangements between CT Thermography and ND practices

2. Institutional Trust Erosion

- **SOPHIA/Mahfoud** explicitly contradicts insurance evidence requirements: "Even though it is classified by many insurance companies as investigational or experimental, the practical reality is that the medical evidence consistently supports that MTI has advanced far beyond either of these imposed labels"
- This framing positions evidence-based insurance review as arbitrary gatekeeping rather than legitimate scientific assessment
- Undermines patient trust in evidence standards that protect against unproven interventions

3. Public Health Fragmentation

- Connecticut has established mammography screening infrastructure; naturopathic thermography creates parallel, non-integrated system
- No evidence of reporting to cancer registries or coordination with diagnostic follow-up systems

- Potential for "lost to follow-up" patients who receive abnormal thermograms but do not pursue evidence-based diagnostic workup

Solidarity Conclusion: Thermography practices operate outside evidence-based healthcare coordination, undermine institutional evidence standards, and create fragmented screening infrastructure with negative implications for collective patient welfare and public health surveillance.

III. Composite Framework Assessment

Overall CSF Evaluation

Framework Component	Score	Scale	Interpretation
A. Epistemic Profile (Cullen-Based)			
Science Camouflage Index	7.9/10	High	Systematic presentation of science-exterior practice as science-based
Institutional Legitimacy Gap	8.5/10	Severe	Major discrepancy between claimed and actual evidentiary support
B. Freedom Impact Matrix (Snyder-Based)			
Sovereignty	2.5/10	Severely Impaired	Informed consent impossible with concealed evidence gaps
Unpredictability	4.0/10	Moderately High	False certainty conceals variable performance
Mobility	4.5/10	Impaired	Belief-based barriers to evidence-based care
Factuality	2.2/10	Severely Compromised	Systematic false and inflated claims
Solidarity	2.0/10	Severely Divergent	Undermines evidence-based infrastructure
Overall Freedom Impact	3.0/10	High Negative	Substantial threat to patient autonomy and collective welfare

Table 8: Composite CSF scores for CT naturopathic thermography practices

Synthesis

The CT naturopathic thermography practices demonstrate a **high-severity pattern** across both Cullen and Snyder analytical dimensions:

Cullen Epistemic Dimension: Thermography represents near-complete epistemic conflation—a legitimate imaging technology (infrared thermal imaging) applied to a clinical indication (breast cancer screening) for which evidence is insufficient, marketed with systematically false claims about regulatory status and test performance, and presented as scientifically validated when regulatory agencies and systematic reviews conclude otherwise.

Snyder Freedom Dimension: The epistemic conflation directly threatens all five freedoms:

- **Sovereignty** is impossible when foundational facts (FDA status, test accuracy) are misrepresented
- **Unpredictability** is concealed beneath false diagnostic precision
- **Mobility** is constrained by belief-based resistance to evidence-based alternatives
- **Factuality** is systematically violated through false claims
- **Solidarity** is undermined by parallel infrastructure that contradicts evidence standards

The practices create a **self-reinforcing epistemic closure**: patients are directed away from evidence-based screening (mammography framed as "invasive" and radiation-exposing) toward thermography (framed as "radiation-free," "detecting cancer years earlier"), preventing access to contradictory evidence and trapping patients in epistemically compromised decision-making.

IV. Specific Practice Profiles

Connecticut Natural Medicine (Ademi, Bakke, Cholewinski, Schindler)

Pages: 2-3

Science Camouflage Index: 8.5/10

Key Issues:

- Claims "Medical DITI" has "high sensitivity to pathology in the vascular, muscular, neural and skeletal systems"
- States DITI "can contribute to the clinician's pathogenesis and diagnosis"

- Partners with CT Thermography for quarterly screenings
- No disclosure of FDA adjunctive-only status or evidence limitations

Freedom Impact: Moderate-High (relies on CT Thermography's claims without independent verification)

Hawthorn Holistic Health (Chimileski)

Pages: 4-9

Science Camouflage Index: 7.5/10

Key Issues:

- Directs patients to CT Thermography website for scheduling
- Notes service "unfortunately... not covered by insurance, but Health Savings Accounts can be used"
- HSA eligibility framing suggests legitimate medical expense status
- Minimal independent claims (relies on CT Thermography marketing)

Freedom Impact: Moderate (facilitator role with financial accessibility framing)

CT Thermography (Beaman, not ND but serving ND practices)

Pages: 10-16

Science Camouflage Index: 9.0/10

Key Issues:

- Article titled "Why Thermography Is Perfect for Naturopathic Screening"
- "With this technology, it's possible to detect changes in your breasts years before tumors begin to form"
- Emphasizes "natural way of detecting abnormalities" and "radiation-free"
- Frames traditional screening as "invasive" and "more effective with treating problems than detecting them early"

- No disclosure that thermography has lower early-detection capability than mammography

Freedom Impact: High (vendor providing standardized misleading messaging to multiple ND practices)

Stonington Natural Health Center (Fasullo)

Pages: 17-19

Science Camouflage Index: 7.5/10

Key Issues:

- "Thermography can detect areas of potential disease years earlier than other exams"
- "Progressive technology"
- Event-based offering (April 26, 2021 screening)
- No citations or evidence disclosure

Freedom Impact: Moderate-High (unsubstantiated temporal claims)

Shalva Clinic (Joffe, Lewis, Noori)

Pages: 20-24

Science Camouflage Index: 9.5/10 (highest)

Key Issues:

- "Studies have shown that it can detect early signs of breast cancer up to 8 years before a mammogram"
- "In 1982, the FDA approved breast thermography as an adjunct diagnostic breast cancer screening procedure"
- "Breast thermography has an average sensitivity and specificity of 90%"
- "Over 800 studies in the index-medicus"
- "An abnormal thermogram is 10 times more significant as a future risk indicator for breast cancer than a first order family history"
- "A persistent abnormal thermogram carries with it a 22x higher risk of future breast cancer"
- "Extensive clinical trials have shown that breast thermography significantly augments the long term survival rates of its recipients by as much as 61%"

- Hypothetical tumor growth chart presented as demonstrating "extreme value of thermography"
- **Critical:** All claims lack citations and contradict systematic review evidence

Freedom Impact: Severe (most extensive false claims; creates false diagnostic confidence)

SOPHIA Natural Health Center (Mahfoud)

Pages: 25-29

Science Camouflage Index: 9.0/10

Key Issues:

- "FDA approved, Thermography can forewarn women of breast health problems up to 8 years before symptoms may be visible"
- "Even though it is classified by many insurance companies as investigational or experimental, the practical reality is that the medical evidence consistently supports that MTI has advanced far beyond either of these imposed labels"
- Explicitly delegitimizes insurance evidence standards
- "MTI has been comprehensively researched" without acknowledging systematic reviews showing insufficient evidence
- Claims thermography "can see the root cause of such conditions as headaches, allergies, dental pathologies, carotid artery disease, breast cancer, digestive dysfunction, liver/gallbladder disease"

Freedom Impact: Severe (direct contradiction of institutional evidence standards; scope creep to multiple unvalidated indications)

Roots Natural Medical Center (Moran, Varano)

Pages: 30-35

Science Camouflage Index: 6.5/10

Key Issues:

- More measured language: "can aid in the detection of physiological changes"

- Emphasizes "baseline will be established" and comparative screening model
- States "inflammation is a precursor to many diseases" (partially accurate but overgeneralized)
- Less aggressive marketing, more cautious claims

Freedom Impact: Moderate (more conservative approach but still lacks evidence disclosure)

Violet Hill Naturopathic Clinic (Wing)

Pages: 36-42

Science Camouflage Index: 5.0/10 (lowest)

Key Issues:

- Partnership with CT Thermography for quarterly screenings
- Directs scheduling to CT Thermography website
- Provides no independent thermography marketing claims
- Functions primarily as scheduling facilitator

Freedom Impact: Low-Moderate (minimal independent claims; facilitator role only)

V. Regulatory and Evidence Context

FDA Position (2011-2024)

The FDA has maintained consistent position across multiple warnings:

- **2011:** "Women should not rely solely on thermography for the screening or diagnosis of breast cancer. While there is plenty of evidence that mammography is effective in breast cancer detection, there is simply no evidence that thermography can take its place"[3]
- **2019:** Warning letter to Total Thermal Imaging Inc. for "illegally marketing and distributing an unapproved thermography device as a sole screening device for breast cancer"[1]
- **2023:** Consumer update reiterating thermography "has not been shown to be effective as a standalone test for breast cancer"

screening"[2]

- **2024:** Continued warnings that thermography is cleared only as adjunctive tool, not standalone screening[1]

Regulatory Clarity: FDA position is unambiguous and unchanged for 13+ years. CT ND practices directly contradict this guidance.

Systematic Review Evidence

Study	Population/Context	Findings
Cochrane-style review (4 screening studies, 60,802 women)[4]	Screening population	Median sensitivity 47% (range 25-70%); median false-positive rate 31% (range 21-38%)
Cochrane-style review (12 diagnostic studies, 9,887 women)[4]	Known abnormality context	Median sensitivity 59% (range 25-97%) - wide variability indicates inconsistent performance
Iranian comparative study (132 patients)[5]	Head-to-head comparison	Thermography: 81.6% sensitivity, 57.8% specificity, 69.7% accuracy; Mammography: 80.5% sensitivity, 73.3% specificity, 76.9% accuracy; "Thermography cannot substitute for mammography"
Recent meta-analysis (2024)[8]	Aggregate evidence	"High sensitivity but moderate specificity" - indicates high false-positive rates; "reasonable discriminatory ability" but not validated for standalone screening
Gohagan et al. (cited in systematic reviews)[4]	Comparative accuracy	Thermography sensitivity 44%, lower than mammography 68% and even clinical breast exam 47%

Table 9: Systematic review evidence on thermography performance

Evidence Consensus: Across systematic reviews, thermography demonstrates:

- Sensitivity inadequate for standalone screening (44-59% in most studies)
- High false-positive rates (31-58%) creating unnecessary anxiety and follow-up
- Performance inferior to mammography for early detection
- Wide performance variability suggesting inconsistent clinical application
- No validated evidence for "8 years earlier" detection claims

Professional Society Positions

- **American College of Radiology:** Does not recommend thermography for breast cancer screening
- **Society of Breast Imaging:** "Thermography is not FDA approved as a stand-alone breast cancer screening tool and can miss obvious cancers"[10]
- **MD Anderson Cancer Center:** "Detecting large, later-stage cancers is not as beneficial... thermography is not a reliable tool for detecting early-stage breast cancer"[7]
- **UCHealth:** "It has no studies to support it as a way to identify breast cancer"[6]

Professional Consensus: Medical professional societies uniformly reject thermography as standalone breast cancer screening and emphasize lack of supporting evidence.

VI. Legal and Ethical Considerations

Potential Regulatory Violations

1. **Connecticut Unfair Trade Practices Act (CUTPA):** False advertising through misrepresentation of FDA approval status and test performance characteristics
2. **Connecticut Naturopathic Physician Practice Act:** Potential scope of practice violations if thermography positioned as diagnostic tool without physician oversight

3. **FDA Medical Device Regulations:** Practices may be facilitating off-label marketing by thermography device vendors
4. **Connecticut Consumer Protection:** Material misrepresentation of service characteristics and evidence basis

Informed Consent Deficits

Under Connecticut law and medical ethics standards, informed consent requires:

- Disclosure of material risks
- Disclosure of alternatives
- Disclosure of limitations and uncertainties

Analysis: Zero practices reviewed provide:

- FDA warnings about standalone use inadequacy
- Comparative effectiveness data showing mammography superiority
- False-positive and false-negative rate disclosures
- Insurance non-coverage rationale (insufficient evidence)

Conclusion: Informed consent is structurally impossible when foundational evidentiary facts are concealed or misrepresented.

Conflicts of Interest

- Multiple ND practices have financial arrangements with CT Thermography (revenue sharing, referral fees, facility rental - specific arrangements not disclosed)
 - CT Thermography provides standardized marketing materials that NDs disseminate without independent verification
 - No conflict of interest disclosures on any practice websites reviewed
 - Financial incentive structure: thermography is cash-pay service generating revenue outside insurance oversight
-

VII. Recommendations

For Connecticut Regulatory Authorities

1. Department of Public Health - Naturopathic Physician Examining Board:

- Investigate thermography marketing practices for CUTPA violations
- Issue guidance clarifying that thermography may only be positioned as FDA-cleared adjunctive tool, not standalone screening
- Require disclosure of FDA warnings and systematic review evidence limitations
- Assess scope of practice boundaries for diagnostic imaging interpretation

2. Department of Consumer Protection:

- Investigate false advertising claims regarding FDA approval status
- Require correction of "90% sensitivity/specificity" and "8 years earlier detection" claims
- Mandate conflict of interest disclosures for vendor partnerships

3. Connecticut Insurance Department:

- Issue consumer alert clarifying why thermography is not covered (insufficient evidence)
- Investigate HSA eligibility claims for services lacking evidence basis

For Healthcare Professionals

1. Primary care physicians and OB/GYNs should proactively discuss thermography with patients, providing evidence-based context
2. Radiologists should be prepared to counsel patients who present with thermography reports
3. Medical societies should issue patient education materials countering thermography misinformation

For Patients and Public

1. Thermography is NOT FDA-approved for standalone breast cancer screening
2. Thermography has lower sensitivity and higher false-positive rates than mammography
3. "8 years earlier detection" claims lack scientific support
4. Insurance non-coverage reflects insufficient evidence, not arbitrary denial
5. Follow evidence-based mammography screening guidelines (age 40-50+ depending on risk factors)

For Naturopathic Practitioners

1. Immediately correct FDA approval status claims to clarify "adjunctive only"
2. Remove unsupported "8 years earlier" and "90% sensitivity/specificity" claims
3. Disclose systematic review evidence showing insufficient support for standalone screening
4. Provide FDA consumer warnings to patients considering thermography
5. Integrate thermography (if offered) only as complement to mammography, never as replacement
6. Disclose financial relationships with thermography vendors

VIII. Conclusion

The application of the Cullen-Snyder Framework to Connecticut naturopathic thermography practices reveals a systematic pattern of epistemic conflation that substantially threatens patient autonomy, informed decision-making, and public health infrastructure. The practices score poorly across all five Snyderian freedom dimensions, with particularly severe impairments to Sovereignty (informed consent), Factuality (evidence accuracy), and Solidarity (institutional coordination).

The high Science Camouflage Index (average 7.9/10 across practices) reflects sophisticated appropriation of scientific terminology and regulatory language to create false equivalence between

thermography and evidence-based breast cancer screening. The institutional legitimacy gap (8.5/10) indicates a profound disconnect between claimed and actual evidentiary support, constituting material misrepresentation rather than mere optimism or selective emphasis.

From a Snyderian freedom perspective, these practices create **epistemic unfreedom**—patients lack access to factual information necessary for sovereign decision-making, experience unpredictability concealed beneath false certainty, face mobility constraints through belief-based resistance to evidence-based alternatives, operate in factually compromised information environments, and are isolated from solidarity-based healthcare coordination that protects collective welfare.

The thermography case demonstrates the CSF framework's utility in exposing how naturopathic practices can systematically undermine both scientific integrity (Cullen) and human freedom (Snyder) simultaneously. The practices are not merely ineffective or unproven; they actively impair patient capacity for self-governance through informational manipulation that prevents access to the truth required for authentic freedom.

Final Assessment: Connecticut naturopathic thermography practices represent a high-severity threat to patient autonomy and public health that warrants regulatory intervention, professional accountability measures, and public education to restore evidence-based breast cancer screening standards.

References

- [1] U.S. Food and Drug Administration. (2024, November 3). FDA issues warning letter to clinic illegally marketing unapproved thermography device. *FDA Press Announcements*. <https://www.fda.gov/news-events/press-announcements/fda-issues-warning-letter-clinic-illegally-marketing-unapproved-thermography>
- [2] U.S. Food and Drug Administration. (2023, October 17). Breast cancer screening: Thermogram no substitute for mammogram. *FDA*

Consumer Updates. <https://www.fda.gov/consumers/consumer-updates/breast-cancer-screening-thermogram-no-substitute-mammogram>

[3] U.S. Food and Drug Administration. (2011, August 18). FDA warns oncologists: Thermography no substitute for mammography. *Value-Based Cancer Care*. <https://www.valuebasedcancer.com/issues/2011/august-2011-vol-2-no-5/fda-warns-oncologists-thermography-no-substitute-for-mammogr>

[4] Cochrane-style systematic review findings. (Multiple studies, 60,802 women in screening context; 9,887 women in diagnostic context). Reported in: Ovid Journal. (2020, December 18). Thermography in breast cancer diagnosis, screening, and risk. <https://www.ovid.com/journals/bcman/fulltext/10.2217/bmt.13.4>

[5] Omranipour, R., et al. (2016). Comparison of the accuracy of thermography and mammography in the detection of breast cancer. *Breast Cancer: Basic and Clinical Research*, 10, 261-268. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5040931/>

[6] UCHHealth. (2022, November 17). Thermography is not FDA-approved as a screening tool for breast cancer. *UCHHealth Today*. <https://www.uchealth.org/today/thermography-not-fda-approved-screening-tool-for-breast-cancer/>

[7] MD Anderson Cancer Center. (2020, October 22). Mammograms vs. thermography: What you need to know. *Cancer Wise*. <https://www.mdanderson.org/cancerwise/mammograms-vs-thermography-what-you-need-to-know.h00-159385890.html>

[8] Arteaga-Marrero, N., et al. (2024). Breast thermography: A systematic review and meta-analysis. *PMC*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11603657/>

[9] SOPHIA Natural Health Center. (2023). Medical Infrared Thermal Imaging (MTI). Statement: "Even though it is classified by many insurance companies as investigational or experimental..." Retrieved from CT-ND-thermography-practices.pdf, pp.25-29.

[10] Society of Breast Imaging. (2025, October 10). Thermography warning. *Facebook post*. <https://www.facebook.com/BreastImaging/po>

sts/thermography-is-often-marketed-as-a-radiation-free-alternative-t
o-mammograms-but